

# **ANNUAL REPORT 2011-2012**

## CHIEF DRINKING WATER INSPECTOR



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Information on individual inspection ratings and drinking water quality results for municipal residential drinking water systems and details of orders and convictions for drinking water systems and licensed laboratories can be found in the Appendices on the Drinking Water Ontario website at [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater).

# MESSAGE FROM THE CHIEF DRINKING WATER INSPECTOR

It is my pleasure to share this annual report with you. This report highlights many successes the ministry and our drinking water partners have achieved in 2011-12.

Ontario's drinking water continues to be among the best protected in the world. Our strong and consistent performance is great news and our results confirm once more that our safety net is working.

Working with our partners and stakeholders, we strive to provide Ontarians with the highest quality drinking water and safeguard our resources. Our belief in shared responsibility and excellence is demonstrated through our commitment to continuous improvement. We will continue to work vigilantly with our partners to help ensure the safety of Ontario's drinking water.

Ontario's regulated drinking water community and qualified and eligible laboratories that test our drinking water samples continue to successfully meet their regulatory requirements. In 2011-12:

- 99.87 per cent of the 525,199 drinking water test results from municipal residential drinking systems met Ontario's rigorous drinking water quality standards.
- 99.5 per cent of all inspections for municipal residential drinking water systems resulted in inspection ratings of greater than 80 per cent.
- 60 per cent of these inspections resulted in inspection ratings of 100 per cent

In this report, you will find a message from Dr. Arlene King, Ontario's Chief Medical Officer of Health, who has provided information on small drinking water systems regulated by the Ministry of Health and Long-Term Care.

This annual report provides a comprehensive overview of the excellent quality of Ontario's drinking water, results of our inspections of drinking water systems as well as qualified and eligible laboratories testing our drinking water samples and the ministry's enforcement activities from April 1, 2011 to March 31, 2012. Additional information about our source-to-tap programs can be found at [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater).

**Susan Lo,**  
Chief Drinking Water Inspector  
Ministry of the Environment



# PROTECTING ONTARIO'S DRINKING WATER

## ONTARIO'S DRINKING WATER SAFETY NET

We have a comprehensive safety net for drinking water that starts at the source and continues until you turn on your tap. With ongoing support from our many partners (e.g., municipalities, owners and operators, local health units, the Walkerton Clean Water Centre and stakeholder associations), we continue to strengthen Ontario's drinking water safety net. This multi-barrier approach includes an extensive network of safeguards to help prevent contamination, detect and solve water quality problems, enforce laws and regulations and increase people's awareness of the importance of safe and high quality drinking water. This award-winning system of checks and balances includes:

- **Strong legislative and regulatory framework:** the Safe Drinking Water Act, the Clean Water Act and their regulations as well as mandatory health-based drinking water quality standards are one of the foundations of the safety net.
- **Source-to-tap focus:** safeguards are in place at every step of the process to address risks to the quality of drinking water, and deal with potential issues before they become problems.
- **Health-based standards for drinking water:** our standards are set based on the best available science, and are regularly reviewed to provide an exceptional level of protection.
- **Regular and reliable testing:** water from Ontario's regulated drinking water systems is tested regularly for safety and quality. Every year, qualified and eligible laboratories conduct hundreds of thousands of tests on samples from the drinking water systems to ensure that they meet Ontario's stringent health-based standards.
- **Swift, strong action on Adverse Water Quality Incidents:** this critical component ensures effective oversight, strict monitoring and prompt action if an event occurs.
- **Mandatory licensing, operator certification and training requirements:** well-trained and certified drinking water system operators and municipal drinking water system owners across the province are a key component of the safety net.
- **A multifaceted compliance improvement toolkit:** we carry out a range of activities to improve compliance including providing compliance support tools to increase understanding and enable informed and effective actions, targeted inspections to confirm compliance and, where necessary, enforcement actions to address significant non-compliance issues.
- **Partnership, transparency and public engagement:** we work with many partners to deliver high quality tap water to Ontarians.

Figure 1: Ontario's Drinking Water Safety Net



With these safeguards in place to protect the quality of your drinking water, you can be confident that Ontario's drinking water continues to be among the safest in the world. Figure 1 shows the eight key elements of the safety net. Visit [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater) to learn more about each element.

## Corrective Action on Adverse Water Quality Incidents

As part of the safety net that protects our drinking water, the Safe Drinking Water Act requires every adverse water quality incident (AWQI) to be reported immediately, and corrective action to be taken right away.

Since an AWQI could signal a potential health threat to a community's drinking water system, when it is reported, immediate notification must be given to the respective system's **operating authority** or owner, the local Medical Officer of Health and the Ministry of the Environment's Spills Action Centre.

Immediate actions to address the problem can range from taking more drinking water samples and flushing the system's lines to the local Medical Officer of Health issuing a **Boil Water Advisory** or a **Drinking Water Advisory**.

## SOURCE WATER PROTECTION

Significant progress has been made in source water protection. The ministry received all the locally-developed source protection plans that address risks to the quality and quantity of drinking water sources. The minister approved the first plan, for the Lakehead Source Protection Area, on January 16, 2013. The others are being reviewed by ministry staff.

We also remain committed to helping ensure that source protection plans address the needs of local communities and can be implemented effectively. Local leadership plays a key role in protecting drinking water sources across Ontario.

To support local efforts, we implemented the Ontario Drinking Water Stewardship Program, which in part, provides assistance to persons or organizations for activities to protect municipal drinking water sources. A significant component of this program provided financial assistance to property owners to take voluntary actions to address significant risks identified in local assessment reports.

The program has funded over 3,000 local, on-the-ground actions to protect water supplies. Some of these actions include education and outreach in local communities about the source protection program; decommissioning old abandoned wells and upgrading existing wells; septic systems education, upgrades and inspections; pollution prevention reviews, and runoff and erosion protection measures.

Our local partners, including municipalities, have a key role in implementing source protection plans. We continue to support them as they prepare for this stage in the program. For example, as of March 31, 2013, over 120 risk management officials and inspectors have taken the ministry-approved training program required to fulfill their responsibilities related to source protection under the Clean Water Act. To find out more about drinking water source protection in your local source protection area, please visit [www.conservation-ontario.on.ca/source\\_protection/otherswregionsindex.htm](http://www.conservation-ontario.on.ca/source_protection/otherswregionsindex.htm).

## STATUTORY STANDARD OF CARE

Municipal officials play an important role in protecting public health by providing responsible and diligent oversight of their communities' drinking water.

Section 19 of the Safe Drinking Water Act came into force on December 31, 2012. This section requires people with oversight responsibilities for a municipal drinking water system to exercise a level of care, diligence and skill that a reasonably prudent person would be expected to take in a similar situation. This section also requires that they act honestly, competently and with integrity with a view to ensuring the protection and safety of the users of the municipal drinking water system. The standard of care extends to the owner of a municipal drinking water system, directors and officers of corporations if the municipal drinking water system is owned by a corporation other than a municipality, and those people who oversee the accredited operating authority or exercise decision making authority over the system.

In 2009-10, the ministry and the Walkerton Clean Water Centre worked with an advisory group comprised of municipal elected officials as well as municipal and drinking water association members to develop a guide and training course for municipal councillors that helps them provide better oversight of drinking water systems. The Walkerton Clean Water Centre offers a training course for municipal officials on standard of care and the guide is available on the Drinking Water Ontario website to help municipal officials learn about their responsibilities.

As of March 31, 2013, 1,209 municipal officials have received training from the Walkerton Clean Water Centre to help them understand their key responsibilities. Over the next year, we will be reviewing and refreshing the guidance material and training.

## MUNICIPAL DRINKING WATER LICENSING PROGRAM

Ontario was the first jurisdiction in North America to mandate that all municipal residential drinking water systems incorporate a drinking water quality management system at their facilities, extending the focus from the design, construction and operations of the drinking water system to the ongoing management of all aspects of the system.

As of September 2012, all municipal residential drinking water systems have received their licences as part of the Municipal Drinking Water Licensing Program. To become licensed, an owner must prepare a financial plan for their system, have a Permit to Take Water and Drinking Water Works Permit, and prepare an operational plan that is based on the Drinking Water Quality Management Standard. The owner is also required to have an operating authority for the system that has received accreditation based on a third-party audit of their quality management system.

We are developing and updating our guidance materials to better clarify program requirements, and share best practices to help drinking water system owners and operators in Ontario improve their quality management systems.

# ONTARIO'S DRINKING WATER REPORT CARD

Evaluating both the quality of the drinking water after treatment and how well the system or laboratory does during an inspection helps us assess the quality of your drinking water.

## DRINKING WATER QUALITY

To help protect Ontario's drinking water, we apply 158 health-based water quality standards for microbiological, chemical and radiological parameters when testing drinking water quality.

We regularly monitor the quality of Ontario's drinking water through routine testing. Test results are the ongoing assessment of a system's ability to provide the people of Ontario with high quality drinking water. The Safe Drinking Water Act and its regulations specify testing requirements and actions that must be taken in the event a standard is not met. These actions may include but are not limited to carrying out additional sampling and reporting to the ministry.

Regular testing is carried out by qualified and eligible laboratories. These include laboratories that are licensed to perform drinking water testing in Ontario or those outside the province that are approved by the Director. See the section on Inspecting Laboratories Performing Drinking Water Testing to learn more about these drinking water testing facilities.

In this section of my report, I would like to share the results of drinking water quality testing for three key types of parameters — microbiological, chemical and radiological. The percentage of systems whose drinking water test results meets our stringent standards continues to remain high. In 2011-12, 99.8 per cent of test results submitted by qualified and eligible laboratories on behalf of all drinking water systems met the provincial standards.



## Types of Corrective Actions

The Safe Drinking Water Act requires taking immediate corrective action when and where an adverse water quality incident is reported.

Corrective actions depend on the type of incident and facility. Some of the corrective actions required by the Safe Drinking Water Act include one or more of the following:

- Resampling and retesting
- Immediate flushing of the system
- Review of operational processes to identify and correct faulty processes
- Increasing chlorine/chloramine dosage and flushing of the system
- Taking such other steps as are directed by the local Medical Officer of Health

In response to an adverse water quality incident, the local Medical Officer of Health may issue a boil or drinking water advisory. He or she may also require a system or facility owner and/or operator to take one or more of the following actions:

- Resample at the same location or multiple locations
- Bag the drinking water fountains in case of a lead exceedance
- Post signs advising the public not to drink the water
- Provide alternate sources of drinking water

When an adverse incident occurs, ministry staff and local public health units work with affected system owners and/or facilities to ensure corrective actions are taken. If the issue is ongoing, ministry staff in collaboration with local public health units and the system owners will continue to monitor the incident until it is resolved. Once the issue has been resolved, all corrective actions have to be identified and reported to the ministry.

## Municipal Residential Drinking Water Systems

Ontario's drinking water systems continue to provide consistently high quality drinking water and the drinking water test results confirm this finding.

In 2011-12, qualified and eligible laboratories submitted 525,199 sample test results on behalf of 671 municipal residential drinking water systems. Close to 100 per cent of these results met the ministry's rigorous standards.

**Table 1: Percentage of Test Results Meeting Standards in Municipal Residential Drinking Water Systems**

Drinking Water Facility Type	Parameter	2009-10 % Meeting Standards	2010-11 % Meeting Standards	2011-12 % Meeting Standards
Municipal Residential Systems	Microbiological <sup>1</sup>	99.92	99.90	99.89
	Chemical <sup>2</sup>	99.64	99.67	99.69
	Radiological	100.00	100.00	100.00
	<b>TOTAL</b>	<b>99.88</b>	<b>99.87</b>	<b>99.87</b>

1 Microbiological includes only *E. coli* and total coliform results.

2 Lead plumbing results were not included in chemical analysis; however, lead distribution results were included. See Table 11 for additional details about lead in plumbing.

## Non-Municipal Year-Round Residential Drinking Water Systems and Systems Serving Designated Facilities

Some Ontario residents, such as those living in mobile home parks and other residential facilities that are not connected to a municipal system, are serviced by non-municipal year-round residential drinking water systems.

We continue to work with the owners and operators of smaller systems to inform them about their regulatory responsibilities and help them comply with the requirements of O. Reg. 170/03.

Of the 41,627 drinking water test results that qualified and eligible laboratories submitted on behalf of these systems, 99.45 per cent met Ontario's strict standards.

**Table 2: Percentage of Test Results Meeting Standards in Non-Municipal Year-Round Residential Drinking Water Systems**

Drinking Water Facility Type	Parameter	2009-10 % Meeting Standards	2010-11 % Meeting Standards	2011-12 % Meeting Standards
Non-Municipal Year-Round Residential Systems <sup>3</sup>	Microbiological <sup>1</sup>	99.52	99.32	99.46
	Chemical <sup>2</sup>	99.49	99.56	99.43
	<b>TOTAL</b>	<b>99.51</b>	<b>99.38</b>	<b>99.45</b>

1 Microbiological includes only *E. coli* and total coliform results.

2 Lead plumbing results were not included in this chemical analysis; however, lead distribution results were included. See Table 11 for additional details about lead in plumbing.

3 Currently, there are no non-municipal year-round residential systems that have a requirement to carry out tests for radiological parameters.

Some health care centres, children's camps, schools and day nurseries in remote or rural Ontario that have their own drinking water systems, are referred to as systems serving designated facilities. Of the 86,844 test results submitted on behalf of these systems, 99.52 per cent met the standards. When microbiological or chemical parameters exceed the standards, corrective action is taken immediately so that people of Ontario can continue to be confident in the safety and quality of the drinking water that is provided by these systems.

**Table 3: Percentage of Test Results Meeting Standards in Systems Serving Designated Facilities**

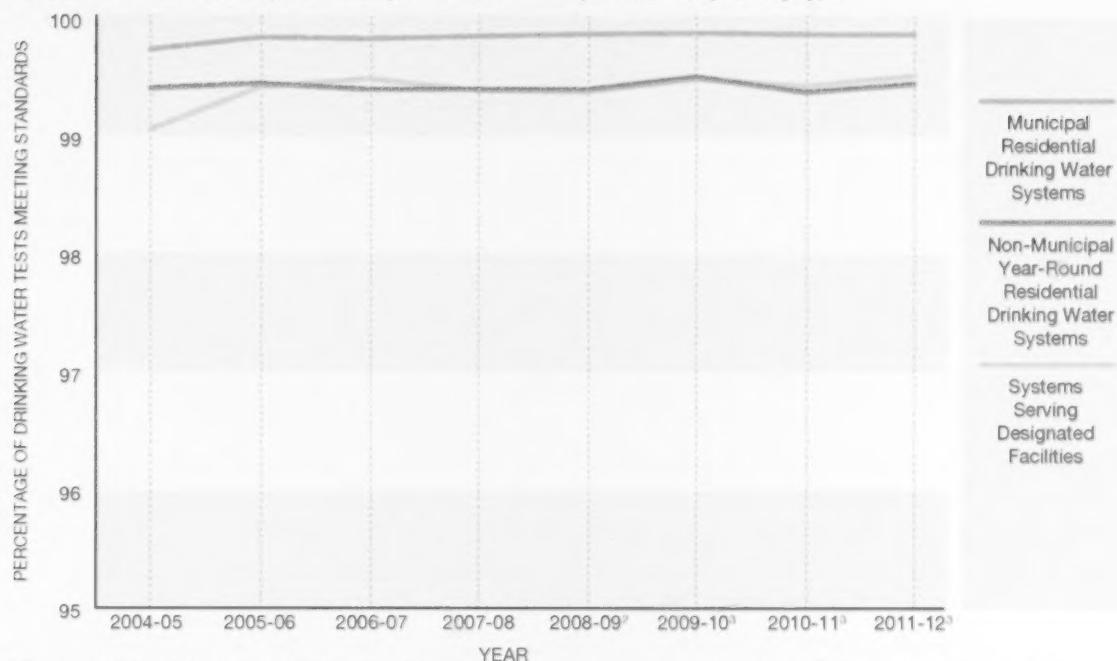
Drinking Water Facility Type	Parameter	2009-10 % Meeting Standards	2010-11 % Meeting Standards	2011-12 % Meeting Standards
Systems Serving Designated Facilities <sup>2</sup>	Microbiological <sup>1</sup>	99.55	99.50	99.40
	Chemical	99.36	99.31	99.67
	<b>TOTAL</b>	<b>99.49</b>	<b>99.43</b>	<b>99.52</b>

1 Microbiological includes only *E. coli* and total coliform results.

2 Currently, there are no systems serving designated facilities that have a requirement to carry out tests for radiological parameters.

The consistency of the test results meeting standards clearly demonstrates that Ontario's drinking water continues to be of high quality.

Figure 2: Trends in Percentage of Drinking Water Tests Meeting Standards, by Facility Type<sup>1</sup>



1 There were slight variations in the methods used to tabulate the percentages year-over-year due to regulatory changes and use of different counting methods.

2 Lead results were not included as they were reported separately.

3 Lead distribution results were included and lead plumbing results were reported separately.

Table 4 provides details of drinking water test results and number of adverse test results including microbiological, chemical and radiological parameters reported by qualified and eligible laboratories.

Table 4: Summary of Drinking Water Test Results for All Facility Types in 2011-12

Drinking Water Facility Type	Parameter	# of Test Results	# of Test Results Meeting Standards	# of Adverse Test Results	# of Systems with Adverse Test Results <sup>1</sup>
Municipal Residential Systems	Microbiological <sup>2</sup>	463,310	462,797	513	186
	Chemical <sup>3</sup>	61,887	61,694	193	83
	Radiological	2	2	0	0
	<b>TOTAL</b>	<b>525,199</b>	<b>524,493</b>	<b>706</b>	<b>238</b>
Non-Municipal Year-Round Residential Systems <sup>4</sup>	Microbiological <sup>2</sup>	30,794	30,628	166	83
	Chemical <sup>3</sup>	10,833	10,771	62	23
	<b>TOTAL</b>	<b>41,627</b>	<b>41,399</b>	<b>228</b>	<b>101</b>
Systems Serving Designated Facilities <sup>4</sup>	Microbiological <sup>2</sup>	47,002	46,719	283	180
	Chemical	39,842	39,709	133	43
	<b>TOTAL</b>	<b>86,844</b>	<b>86,428</b>	<b>416</b>	<b>220</b>

1 A single system could have adverse test results for multiple parameters. For calculation of totals, a system with adverse test results across multiple parameters is counted only once.

2 Microbiological includes only *E. coli* and total coliform results.

3 Lead plumbing results were not included in this chemical analysis; however, lead distribution results were included. See Table 11 for additional details about lead in plumbing.

4 Currently, there are no requirements for these systems to carry out tests for radiological parameters.

# DRINKING WATER QUALITY STANDARDS

The Ontario Drinking Water Quality Standards are listed in O. Reg. 169/03. Most of these standards are based on Health Canada's Canadian Drinking Water Quality Guidelines developed by the Federal-Provincial-Territorial Committee on Drinking Water, which includes Ontario. Health Canada also collaborates with internationally respected organisations such as the World Health Organization and the U.S. Environmental Protection Agency when developing these standards.

Health Canada regularly evaluates the existing Canadian Drinking Water Quality Guidelines to determine whether any new information on health impacts or treatment technologies has become available. It also looks at any new scientific information and national drinking water surveillance data to determine if guidelines for new substances are required. Once Health Canada publishes these new guidelines, Ontario considers their suitability as provincial standards and ministry staff provide a recommendation to the minister on those that should move forward. This recommendation is based on a comprehensive analysis of systems affected, treatment costs involved, analytical capability, an evaluation of health benefits and advice from the Ministry of Health and Long-Term Care, Public Health Ontario, stakeholders, and Ontario's Advisory Council on Drinking Water Quality and Testing Standards.

The ministry then carries out public consultation on the Environmental Bill of Rights (EBR) Registry to obtain stakeholder input. This step gives everyone in Ontario the opportunity to make a submission on the standards for consideration by the ministry. Based on EBR Registry consultation, and follow-up discussions with stakeholders and other ministries, ministry staff develop and present their final advice to the minister. The minister then considers whether to recommend that the Lieutenant Governor in Council amend O. Reg. 169/03 to adopt the Canadian Drinking Water Quality Guidelines as standards in Ontario, or whether more stringent standards are needed.

## Microbiological Test Results and Standards

The provincial regulations require regular testing of drinking water samples to detect the presence of microbiological organisms including total coliforms and *Escherichia coli* (*E. coli*) bacteria. The presence of these organisms in drinking water indicates microbiological contamination and has the potential to cause serious health problems. For this reason, Ontario's drinking water quality standards (O. Reg. 169/03) require that total coliforms and *E. coli* not be present in drinking water samples. The presence of these organisms in drinking water samples is considered to be an adverse water quality incident and requires immediate mandatory reporting and corrective actions.

Table 5: Breakdown of Microbiological Test Results in 2011-12

Drinking Water Facility Type	Parameter	# of Test Results	# of Test Results Meeting Standards	# of Adverse Test Results	# of Systems with Adverse Test Results
Municipal Residential Systems	<i>E. coli</i>	231,639	231,604	35	25
	Total Coliform	231,671	231,193	478	186
Non-Municipal Year-Round Residential Systems	<i>E. coli</i>	15,396	15,382	14	10
	Total Coliform	15,398	15,246	152	83
Systems Serving Designated Facilities	<i>E. coli</i>	23,498	23,478	20	16
	Total Coliform	23,504	23,241	263	180

A comparison of the drinking water test results meeting microbiological standards over the past eight years shows that they have remained stable and consistently high.

**Table 6: Percentage of Tests from Municipal Residential Drinking Water Systems Meeting Ontario's Drinking Water Quality Standards, by Year, for *E. coli***

Municipal Residential Drinking Water Systems	Per cent of Drinking Water Tests Meeting Standards							
	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
<i>E. coli</i>	99.97	99.99	99.98	99.99	99.98	99.99	99.99	99.98

## Chemical Test Results and Standards

Ontario's drinking water quality standards establish maximum acceptable concentrations for chemical parameters in drinking water. In addition, the Drinking Water Testing Services Regulation, O. Reg. 248/03, describes the tests that must be completed by qualified and eligible laboratories, and those that can be carried out by an operator.

If during the testing of samples, any qualified and eligible laboratory or system operator finds concentrations over the prescribed standards, they must report the adverse test result(s) to the:

- Ministry's Spills Action Centre
- Local Medical Officer of Health
- Operating authority or owner of the drinking water system

The operating authority or owner of the drinking water system must also notify the ministry's Spills Action Centre and the local Medical Officer of Health. This duplication of reporting is one of the key components of Ontario's safety net. It helps to ensure that all appropriate notifications are made and that corrective action(s) are taken. To learn more about adverse test results and corrective actions see the Adverse Water Quality Incidents by Drinking Water Facility Type section later in this report.

## Radiological Test Results and Standards

O. Reg. 169/03 sets the drinking water quality standards for radiological parameters. Under certain conditions, a drinking water system may be required to test for radiological parameters. For example, in some parts of the province, there are naturally occurring deposits of uranium, requiring periodic drinking water testing to determine the levels of radiological parameters in the water.

Table 7 provides a list of the adverse test results that were reported in 2011-12.

**Table 7: Number of Chemical Standard Adverse Test Results by Facility Type<sup>1</sup>**

Parameter	2009-10		2010-11		2011-12	
	# of Adverse Test Results	# of Systems with Adverse Test Results <sup>2</sup>	# of Adverse Test Results	# of Systems with Adverse Test Results <sup>2</sup>	# of Adverse Test Results	# of Systems with Adverse Test Results <sup>2</sup>
<b>Municipal Residential Drinking Water Systems</b>						
Arsenic <sup>3</sup>	0	0	0	0	1	1
Barium <sup>4</sup>	4	1	4	1	0	0
Benzo[a]pyrene	1	1	0	0	0	0
Bromate	0	0	1	1	1	1
Cadmium	0	0	0	0	1	1
Fluoride <sup>5</sup>	74	18	81	21	62	18
Lead <sup>4</sup>	68	43	35	22	47	33
Nitrate (as Nitrogen)	3	2	0	0	0	0
Nitrate + Nitrite (as Nitrogen)	3	2	0	0	0	0
Selenium <sup>3</sup>	10	1	7	1	8	1
Trihalomethanes <sup>5</sup>	69	26	68	28	71	30
Uranium <sup>3</sup>	2	1	0	0	2	1
<b>Total</b>	<b>234</b>	<b>69</b>	<b>196</b>	<b>72</b>	<b>193</b>	<b>83</b>
<b>Non-Municipal Year-Round Residential Drinking Water Systems</b>						
Arsenic <sup>3</sup>	0	0	1	1	0	0
Barium <sup>3</sup>	2	1	0	0	3	2
Fluoride <sup>3</sup>	6	4	7	4	11	7
Glyphosate	0	0	1	1	0	0
Lead <sup>4</sup>	14	7	5	4	3	3
Nitrate (as Nitrogen)	12	4	11	5	15	4
Nitrite (as Nitrogen)	1	1	0	0	0	0
Nitrate + Nitrite (as Nitrogen)	12	4	11	5	15	4
Selenium <sup>3</sup>	2	1	0	0	0	0
Trihalomethanes <sup>5</sup>	5	2	9	4	14	6
Uranium <sup>3</sup>	6	3	8	4	1	1
<b>Total</b>	<b>60</b>	<b>23</b>	<b>63</b>	<b>23</b>	<b>82</b>	<b>23</b>
<b>Systems Serving Designated Facilities</b>						
Antimony	0	0	1	1	0	0
Arsenic <sup>3</sup>	0	0	3	2	2	2
Barium <sup>3</sup>	0	0	0	0	5	2
Benzo[a]pyrene	0	0	2	1	0	0
Cadmium	0	0	2	2	0	0
Fluoride <sup>3</sup>	48	20	31	11	58	22
Lead <sup>4</sup>	8	6	6	5	11	6
Nitrate (as Nitrogen)	53	16	60	18	25	7
Nitrite (as Nitrogen)	1	1	19	3	3	2
Nitrate + Nitrite (as Nitrogen)	54	16	60	18	25	7
Selenium <sup>3</sup>	2	2	1	1	0	0
Uranium <sup>3</sup>	0	0	0	0	4	3
<b>Total</b>	<b>166</b>	<b>44</b>	<b>185</b>	<b>38</b>	<b>133</b>	<b>43</b>

<sup>1</sup> Sampling frequency varies according to regulation and parameter and is dictated by facility type. Some drinking water systems collect and submit samples for testing above and beyond the requirements of the legislation. Therefore, year-over-year comparisons do not provide a complete and consistent overview of the results.

<sup>2</sup> A single system could have adverse test results for multiple parameters. For calculation of totals, a system with adverse test results across multiple parameters is counted only once.

<sup>3</sup> In some parts of the province, there are naturally occurring deposits of arsenic, barium, fluoride, selenium and uranium that may result in adverse water quality incidents.

<sup>4</sup> The lead parameter did not include lead sampled in plumbing for municipal residential and non-municipal year-round residential drinking water systems; however, lead sampled in the distribution system was included.

<sup>5</sup> Trihalomethanes are reported as the running average of quarterly samples over one year.

## Adverse Water Quality Incidents

An adverse water quality incident (AWQI) occurs when a drinking water standard is exceeded. It is important to note that this is not necessarily an indication that the drinking water is unsafe. Under O. Reg. 170/03, an adverse water quality incident occurs if any of the conditions listed under that regulation are met. The following are some of the conditions that may result in an AWQI:

- A test result exceeding any of the Ontario Drinking Water Quality Standards.
- Microbiological species that are not listed in the Ontario Drinking Water Quality Standards are detected in the test result.
- A test result exceeding the maximum concentration for a health-related parameter as established in a municipal drinking water licence or order.
- A test result indicating the presence of a pesticide, not listed in the Ontario Drinking Water Quality Standards, at any concentration.
- An operational issue in a drinking water facility, such as insufficient disinfection, high turbidity or equipment problems. These issues may also include sampling errors, reduction in water pressure, contamination following a heavy rainfall or other adverse weather events.

Regardless of the circumstances behind AWQIs, qualified and eligible laboratories and drinking water system operating authorities or owners must immediately notify the ministry's Spills Action Centre as well as the local Medical Officer of Health of such incidents. Additionally, drinking water system operating authorities or owners must take prompt corrective actions to rectify the incident. Ministry staff work with all those involved to help ensure all appropriate corrective actions are taken to resolve the issue.

When necessary, we will conduct a site inspection and collect drinking water samples for auditing purposes. We will also monitor and manage all resolution reports from system owners to help ensure that the adverse water quality incidents are appropriately resolved.

Corrective actions vary depending on the adverse event and may include resampling, adjusting the system or treatment processes and/or notifying system users by issuing a boil water or a drinking water notice and/or advisory. The local Medical Officer of Health will direct system owners to issue these advisories if necessary.

Boil water advisories that last for 12 consecutive months are considered to be long-term. In 2010-11, two municipal residential drinking water systems had long-term boil water advisories in place. These advisories were originally issued due to lack of minimum treatment and ongoing adverse water test results in one facility and very low pressure in the distribution system of the second facility. With the installation of a new slow sand filtration system and appropriate treatment at one of the facilities, one advisory was lifted in 2011-12. We continue to work with the remaining system owner to help ensure that ongoing appropriate corrective actions are taking place.

**Table 8: Summary of Adverse Water Quality Incidents by Drinking Water Facility Type**

	2009-10	2010-11	2011-12
<b>Municipal Residential Systems</b>			
# of Systems with AWQIs	412	404	389
# of AWQIs	1,585	1,562	1,402
# of Results within AWQIs <sup>1</sup>	1,706	1,717	1,603
<b>Non-Municipal Year-Round Residential Systems</b>			
# of Systems with AWQIs	197	177	180
# of AWQIs	397	445	412
# of Results within AWQIs <sup>1</sup>	470	546	489
<b>Systems Serving Designated Facilities</b>			
# of Systems with AWQIs	351	373	476
# of AWQIs	606	630	736
# of Results within AWQIs <sup>1</sup>	728	759	828

<sup>1</sup> A single AWQI may occur as a result of multiple issues such as presence of microbiological or chemical parameters and/or operational issues.

## LEAD ACTION PLAN

The most common source of lead in drinking water is lead pipes or solder used to connect the pipes and plumbing fixtures. When water wears away the inner surface of pipes, it is called corrosion. If the pipe's inner surface contains lead, corrosion can cause lead to enter the drinking water. Through regular testing, facility owners and/or operators and ministry staff monitor the presence of lead in drinking water.

The ministry takes drinking water safety seriously. Our Lead Action Plan sets sampling and testing requirements that allow us to collect better information about lead levels in drinking water in communities throughout Ontario.

Schools, day nurseries and regulated drinking water systems are required to test for lead and report any problems to the ministry, and take action if there is reason to believe they may have a lead issue. In addition, schools and day nurseries must regularly flush their plumbing.

Where lead levels exceed the provincial standard, we will continue to focus on public protection by working with municipalities, the local Medical Officers of Health, as well as the regulated community, including schools and day nurseries, to ensure appropriate corrective actions are taken. Corrective actions are recommended by the local public health unit. Actions can range from providing an alternative drinking water supply and/or filters, undertaking longer flushing periods before taking additional samples, to replacing plumbing that is known to contain lead solder, pipes and fixtures.

As you will see in this next part of my report, the vast majority of test results from schools and day nurseries and regulated communities meet the provincial standard for lead.

## Lead Testing Results: Schools and Day Nurseries

O. Reg. 243/07 requires all Ontario schools and day nurseries to regularly flush the water in their facility's plumbing to minimize potential lead exposure in their drinking water.

Consistent lead test results over the past several years show that flushing significantly reduces lead in drinking water. In 2011-12, 95.93 per cent of the flushed sample results that qualified and eligible laboratories submitted on behalf of schools and day nurseries met the lead standard — a result almost seven per cent better than standing sample results.

**Table 9: Year-over-Year Comparison for Lead Test Results Meeting Standards for Schools and Day Nurseries under O. Reg. 243/07**

Parameter	2009-10 % Meeting Standards	2010-11 % Meeting Standards	2011-12 % Meeting Standards
Lead - Flushed	95.79	94.56	<b>95.93</b>
Lead - Standing	88.54	87.58	<b>89.01</b>

As described above, where a test result indicates an exceedance of the lead standard, the school or day nursery experiencing the problem with lead must take corrective actions to address and resolve the issue and help ensure that children are not exposed to lead in drinking water.

Schools and day nurseries must also submit two types of samples of their drinking water for lead testing by a qualified and eligible laboratory:

- Standing samples collected after the plumbing has not been used for at least six hours.
- Flushed samples collected 30 to 35 minutes after running taps and/or faucets for five minutes.

**Table 10: Test Results for Schools and Day Nurseries under O. Reg. 243/07 in 2011-12**

Parameter	# of Results	# of Exceedances	# of Schools and Day Nurseries Submitting Results <sup>1</sup>	# of Schools and Day Nurseries with Exceedances
Lead - Flushed	8,506	346	7,236	192
Lead - Standing	8,491	933	7,234	634

<sup>1</sup> Facilities that share the same plumbing system, known as co-located facilities, are allowed to submit a single set of samples. Also, allowances have been made for facilities to reduce sampling frequency to every 36 months from the required annual testing, based on satisfactory test results.

Laboratories must report any drinking water test result exceeding the standard for lead to the local public health unit and to the ministry. Ministry staff follow up with the local public health unit and the facility to ensure that all recommended corrective actions have been taken.

## Lead Testing Results: Municipal Residential Drinking Water Systems and Non-Municipal Year-Round Residential Drinking Water Systems

O. Reg. 170/03 requires all municipal residential and non-municipal year-round residential drinking water systems to test for lead in plumbing.

**Table 11: Summary of Drinking Water Test Results for Lead in Plumbing for Municipal Residential Drinking Water Systems and Non-Municipal Year-Round Residential Drinking Water Systems in 2011-12**

Drinking Water Facility Type <sup>1</sup>	Parameter	# of Results	# of Exceedances	# of Systems with Exceedances
Municipal Residential Systems	Lead in plumbing <sup>2</sup>	17,401	529	75
Non-Municipal Year-Round Residential Systems	Lead in plumbing <sup>2</sup>	2,539	30	14

1 Systems that only serve designated facilities are exempt from this requirement.

2 Samples taken after flushing of system occurred.

Test results for lead in plumbing of municipal residential drinking water systems and non-municipal year-round residential drinking water systems show that the vast majority of these systems consistently meet Ontario's standards.

**Table 12: Comparison of Drinking Water Test Results for Lead in Plumbing Meeting Standards for Municipal Residential Drinking Water Systems and Non-Municipal Year-Round Residential Drinking Water Systems**

Drinking Water Facility Type <sup>1</sup>	2009-10 % Meeting Standards	2010-11 % Meeting Standards	2011-12 % Meeting Standards
Municipal Residential Systems	96.42	95.68	<b>96.96</b>
Non-Municipal Year-Round Residential Systems	98.49	98.62	<b>98.82</b>

1 Systems that only serve designated facilities are exempt from this requirement.

## Corrosion Control for Municipal Residential Drinking Water Systems

Municipal residential drinking water systems that serve more than 100 private residences must develop corrosion control plans if:

- More than 10 per cent of all plumbing location sampling results show lead amounts greater than 10 micrograms per litre in two out of three sampling rounds, and
- In those two rounds, at least two samples exceeded the standard of 10 micrograms per litre for lead.

Based on the 2011-12 results, no new communities were required to prepare corrosion control plans. Of the 20 communities included in the Chief Drinking Water Inspector's 2010-2011 report, 10 communities submitted their plans and six are pursuing alternative lead control strategies such as replacing lead service lines or changing their water sources. We continue to work with the remaining four communities on the submission of their plans.

# INSPECTING DRINKING WATER SYSTEMS

## Municipal Residential Drinking Water Systems

Ministry staff inspect municipal drinking water systems annually to ensure compliance with Ontario's strict regulatory requirements.

Under the Compliance and Enforcement Regulation (O. Reg. 242/05), one out of every three inspections of a municipal residential drinking water system must be unannounced. We can also conduct unannounced inspections at a greater frequency or in response to incidents.

Within 45 days of the completion of the inspection, we provide municipal residential drinking water system owners or operating authorities with the inspection report.

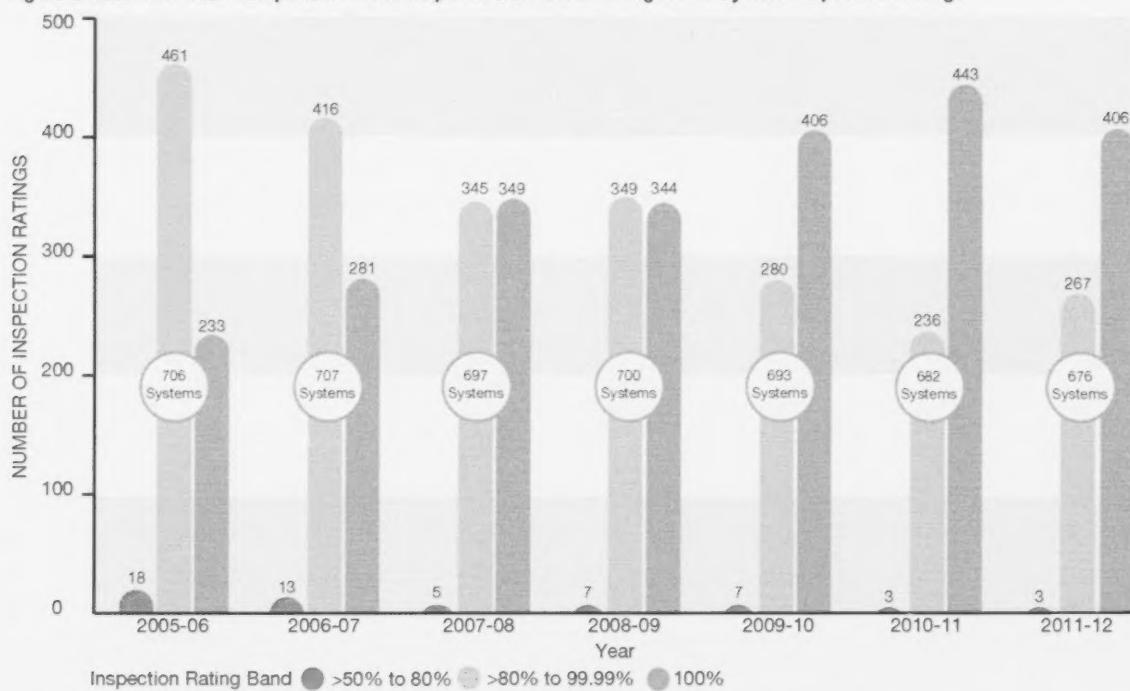
When inspectors identify non-compliance issues in a municipal residential drinking water system, they may decide, or be required, to take mandatory action which could include:

- Identifying in the inspection report provided to the owner and the operating authority areas of non-compliance and suggestions for resolution.
- Discussing crucial inspection findings with the owner/operator.
- Providing the inspection report to other affected parties, including the local Medical Officer of Health and the local conservation authority.
- Providing education and outreach on issues that are not directly related to drinking water safety, such as administrative non-compliance issues.
- Issuing a Provincial Officer's Order.
- Referring the incident to the ministry's Investigations and Enforcement Branch.

## INSPECTION RESULTS

The inspection results are excellent and have remained relatively consistent since 2009-10. In 2011-12, we inspected 676<sup>1</sup> municipal residential drinking water systems. Four hundred and seven of these inspections were announced and 269 were unannounced. During the same reporting period, 99.5 per cent of these inspections resulted in inspection ratings greater than 80 per cent. Sixty per cent of the inspections yielded inspection ratings of 100 per cent. We continue to work with owners and operators of the systems with inspection ratings below 100 per cent to help them gain a better understanding of their obligations and responsibilities so they can improve the performance of their systems.

<sup>1</sup> During the reporting period, some municipal systems ceased to operate or amalgamated their operations. The ministry conducted inspections of these individual systems to ensure compliance prior to ceasing operations or amalgamating.

**Figure 3: Year-over-Year Comparison of Municipal Residential Drinking Water System Inspection Ratings<sup>1</sup>**

<sup>1</sup> The decline in the total number of municipal residential drinking water systems is due to amalgamations and/or consolidation of these systems.

We remain committed to achieving excellence through continuous improvement. After analysing inspection program results, we identify trends in non-compliance and any issues requiring special attention. In 2011-12, ministry staff identified four areas that needed improvement:

- Operating treatment equipment
- Updating operations and maintenance manuals
- Maintaining secondary disinfection
- Taking appropriate corrective actions

All drinking water system owners and operators have the opportunity to meet with the local drinking water supervisor to discuss any concerns related to the compliance inspection and rating report.

## DEFICIENCIES

A deficiency is a violation of specified provisions of the Safe Drinking Water Act or its regulations that, in the opinion of the Director, could pose a drinking water health hazard. For example, water treatment equipment that is not operating according to provincial standards may impact the quality of drinking water and adversely affect the health of the users of the system. The Safe Drinking Water Act requires us to take mandatory action within 14 days of discovering a deficiency at municipal residential drinking water systems.

In 2011-12, ministry staff identified one deficiency at one municipal residential drinking water system. A ministry Provincial Officer issued a Provincial Officer's Order to the owner of the system and has approved an action plan to help ensure a safe and potable water supply is properly maintained for the

users of this water system. The owner is also required to provide training to the system's operators so that they may identify conditions that may adversely affect the water being produced. See the Appendices for more details.

### ORDERS AND ORDER RESOLUTIONS

To help resolve non-compliance issues at a drinking water system, our inspectors may issue an order to a system owner or operator. Types of orders that are used to help resolve non-compliance issues include contravention orders and preventative measures orders.

In 2011-12, we issued seven contravention and/or preventative measures orders to seven municipal residential drinking water systems representing 0.9 per cent of all systems that were inspected:

- Six contravention orders were issued during inspections for issues such as failure to provide proper documentation to the inspector, missing monthly reports on the proper operation of the free chlorine residual alarm, filter efficiency non-compliance, inappropriate logbook maintenance, and failure to comply with the conditions of a municipal residential drinking water licence.
- One preventative measures order was issued to grant temporary regulatory relief allowing the owner to repair the system's main computer and restore proper functioning.

Of the seven systems that received orders, five have complied with the order requirements. The two remaining systems continue to take actions and work towards meeting regulatory requirements. See the Appendices for more details on these systems.

**Table 13: Municipal Residential Drinking Water Systems that Received Orders**

Systems with Inspection-Related Orders	2009-10	2010-11	2011-12
Total Number of Inspections of Municipal Residential Drinking Water Systems	693	682	676
Total Number of Municipal Residential Drinking Water Systems with Inspection-Related Orders	6	5 <sup>1</sup>	6
Per cent of Municipal Residential Drinking Water Systems with Inspection-Related Orders	0.9%	0.7%	0.9%
Systems with Non-Inspection-Related Orders <sup>2</sup>	2	4	1
Total Number of Orders Issued to Municipal Residential Drinking Water Systems (Inspection and Non-Inspection)	8	9	7

<sup>1</sup> In 2010-11, three municipal residential drinking water systems were issued preventative measures orders during an inspection.

<sup>2</sup> Non-inspection-related orders are issued as a result of an event or issue at a drinking water system that occurred outside of the context of a scheduled inspection.

### Non-Municipal Year-Round Residential Drinking Water Systems and Systems Serving Designated Facilities

We continue to conduct proactive, risk-based inspections of non-municipal year-round residential drinking water systems and systems serving designated facilities. Some of the factors that ministry staff consider to determine which systems to inspect include the history of compliance and adverse water quality incidents, as well as referrals from local public health units.

Keeping your drinking water safe is a priority for the ministry. So, when necessary, ministry staff take actions and work with non-municipal year-round residential drinking water systems and those serving designated facilities to ensure they meet regulatory requirements.

To further protect the safety of your drinking water, we have produced a range of educational tools including instructional videos and easy-to-follow plain language guides that help these owners and operators better understand their legal obligations. To learn more about these educational tools, visit [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater).

### INSPECTION RESULTS AND ORDERS

Inspections for non-municipal year-round residential drinking water systems and systems serving designated facilities are proactive and risk-based. In 2011-12, we inspected 105 non-municipal year-round residential drinking water systems and issued 12 contravention orders in response to incidents such as non-compliance issues identified during an inspection, failure to comply with regulatory requirements and inadequate cistern operation.

In 2011-12, ministry inspectors conducted 369 inspections of systems serving designated facilities, and issued five contravention and one preventative measures orders. Incidents leading to the issuance of these orders ranged from non-compliance with drinking water regulations to failure to install adequate treatment equipment.

### Local Services Boards

Local services boards operate some drinking water systems in northern communities that do not have municipal government structures. These systems are classified as non-municipal year-round residential drinking water systems.

### INSPECTION RESULTS AND ORDERS

Ministry staff inspected seven drinking water systems operated by local services boards but no orders were issued as a result of these inspections. One local services board that received orders in 2005-06 and 2006-07 is in the process of constructing and installing a treatment system designed to meet all disinfection requirements as identified in the orders.

### Schools and Day Nurseries

We inspect schools and day nurseries – whether they are connected to municipal drinking water systems or not – to minimize potential lead exposure from pipes and plumbing. Several years of testing for lead in drinking water shows that the majority of Ontario schools and day nurseries regulated under O. Reg. 243/07 do not have an issue with lead in their drinking water as long as flushing remains part of their routine.

### INSPECTION RESULTS AND ORDERS

Our inspection results continue to support the ministry's movement toward a multi-faceted, risk-based approach that engages schools and day nurseries in self-reporting. This new approach aims to assist owners and/or operators of schools and day nurseries in Ontario in fulfilling their regulatory requirements under O. Reg. 243/07.

We expect that information collected through this new component of the Lead Action Plan will help us determine which facilities need further education and guidance to ensure they remain in compliance with regulatory requirements.

From April 1, 2011 to March 31, 2012, we inspected 552 schools and day nurseries and as a result, issued a Provincial Officer's Order to one facility relating to non-compliance.

## INSPECTING LABORATORIES PERFORMING DRINKING WATER TESTING

Ontario's multi-barrier approach to safeguard our drinking water includes regular inspections of all licensed and accredited laboratories that test drinking water samples from regulated systems. Those outside of the province analyzing Ontario's drinking water must be approved by the Director.

Before issuing a drinking water testing licence to a laboratory, the Director must be satisfied that the laboratory meets certain requirements of the Safe Drinking Water Act, including:

- Ability of the laboratory to analyze drinking water samples at appropriate low-level detection limits.
- Appropriate application and use of a referenced analytical methodology.
- Appropriate application and use of instrumentation designed to analyze specific parameters in drinking water.
- Documentation of policies and procedures pertaining to the laboratory's regulatory requirements.

All qualified and eligible laboratories are subject to two types of inspections: announced and unannounced. Inspections may also occur as a result of a complaint received from a ministry staff member or an external source.

We inspect all laboratories analysing Ontario's drinking water providing them with an inspection report within 45 days of the completion of the inspection. Drinking water testing methods, sample handling, management practices, and reporting of adverse water quality incidents are just some of the areas covered during an inspection.

During 2011-12, ministry staff inspected all 51 Ontario licensed laboratories and two out-of-province laboratories a minimum of two times for a total of 105 inspections. Of these inspections, at least one of the two was unannounced.

**Table 14: Summary of Laboratory Inspections**

Inspection Type	Qualified and Eligible Laboratory Inspections		
	2009-10	2010-11	2011-12
Announced	52	53	51
Unannounced	53 <sup>1</sup>	52 <sup>2</sup>	52 <sup>3</sup>
Other <sup>4</sup>	2	1	2
<b>Total</b>	<b>107</b>	<b>106</b>	<b>105</b>
<b>Number of Laboratories Inspected</b>	<b>53</b>	<b>53</b>	<b>53</b>

<sup>1</sup> During 2009-10, one laboratory voluntarily withdrew from, and two laboratories joined, the laboratory licensing program.

<sup>2</sup> During 2010-11, one laboratory voluntarily withdrew from the licensing program between its announced and unannounced inspections.

<sup>3</sup> During 2011-12, one out-of-province laboratory joined the program in progress and received one unannounced inspection.

<sup>4</sup> Other inspections included laboratory pre-licensing or relocation inspections. During 2011-12, of the two laboratories that received pre-licensing inspections, one did not receive any other inspection as it was granted its drinking water testing licence less than three months before the fiscal year ended.

While inspection results demonstrate that qualified and eligible laboratories that test Ontario's drinking water continue to perform well, we identified the following areas for improvement:

- Ensuring the client-generated Chain of Custody Form(s) was approved by the laboratory.
- Maintaining training records showing that appropriate staff have been trained on the procedure for validation of reporting results when internal computers are modified.
- Validating on a routine basis that the results uploaded to the Drinking Water Information System and/or Laboratory Results Management Application databases are the same as those reported to the client.
- Developing a procedure for validating Drinking Water Information System/Laboratory Results Management Application uploaded data, when internal computer systems are modified, to ensure client data and databases are the same.



Ministry staff did not issue any orders to licensed laboratories in 2011-12. The licensed laboratory that received a non-inspection related order in 2010-11 is now in compliance with the requirements.

**Table 15: Summary of Orders Issued to Licensed and Unlicensed Laboratories**

	2009-10	2010-11	2011-12
<b>Licensed Laboratories with Inspection-Related Orders</b>			
Number of Licensed Laboratories that Received Orders	3	0	0
Number of Planned Inspections of Licensed Laboratories	104	103	100
Percentage of Licensed Laboratories that were Inspected and Received Orders	2.9%	0%	0%
<b>Licensed Laboratories with Non-Inspection-Related Orders</b>			
Number of Licensed Laboratories that Received Non-Inspection-Related Orders	0	1	0
<b>Unlicensed Laboratories with Non-Inspection-Related Orders</b>			
Number of Unlicensed Laboratories that Received Non-Inspection-Related Orders	1	0	0
<b>Total Number of Orders Issued to Licensed and Unlicensed Laboratories (Inspection and Non-Inspection)</b>	<b>4</b>	<b>1</b>	<b>0</b>

# SMALL DRINKING WATER SYSTEMS PROGRAM RESULTS

## MINISTRY OF HEALTH AND LONG-TERM CARE

### MESSAGE FROM THE CHIEF MEDICAL OFFICER OF HEALTH

The Ministry of Health and Long-Term Care continues to work in partnership with the Ministry of the Environment to safeguard Ontario's drinking water.

We have a strong track record of collaboration and support between our ministries, most notably demonstrated through our work on the Small Drinking Water Systems Program when oversight responsibility of Ontario's small drinking water systems was transferred to the Ministry of Health and Long-Term Care from the Ministry of the Environment on December 1, 2008. Through this program transfer, administered by our local public health units, Ontario has implemented a risk-based approach for regulating small drinking water systems, whereby risks that may affect the quality of our water are identified and addressed and the safety of our drinking water is monitored and maintained.



The Small Drinking Water Systems Program has comprehensively addressed the Walkerton Inquiry recommendations that many small drinking water systems, which had never before been regulated, be included in the post-Walkerton regulatory framework. In doing so, we have reinforced a world-class system that safeguards our water from source to tap and supports our vision of making Ontario the healthiest place in North America to grow up and grow old.

I look forward to our continued collaboration in protecting and providing safe drinking water for the people of Ontario.

**Arlene King, MD, MHSc, FRCPC**  
Chief Medical Officer of Health  
Ministry of Health and Long-Term Care

## Risk Assessments

Small drinking water systems are regulated under the Health Protection and Promotion Act and its regulations. Using a risk-based approach, local public health inspectors conduct site-specific risk assessments on small drinking water systems in the province.

Based on the assessment, public health inspectors from local public health units are determining what action owners and operators must take to keep their drinking water clean and safe. The risk assessment process involves visiting the small drinking water system to assess the drinking water source, identify risks that may affect the quality of the water, and develop strategies to monitor and maintain safe drinking water. This reflects an adaptive management approach for each small drinking water system based on the level of risk, rather than a "one-size-fits-all" set of requirements.

Risk assessments are conducted through the use of an electronic risk categorization tool, visual inspections of the water source, system equipment and components, and an evaluation of documentation relating to system water testing and historical sampling results.

The inspector is then able to determine a risk category of high, moderate or low for the small drinking water system and develop specific requirements that must be implemented by the owner and/or operator to safely manage the water supply. The requirements are provided to the owner and/or operator through a legally binding directive that applies to that small drinking water system. Requirements that may be included in the directive include: the frequency and sampling locations for water sampling by the owner and/or operator, water treatment requirements, operational checks, and owner and/or operator training.

As of September 2012, 96.3 per cent of the Small Drinking Water Systems Program has been implemented. A total of 10,266 risk assessments have been finalized and 376 are in progress.



**Table 16: Small Drinking Water Systems Risk Assessments**

Risk Assessments		As of December 31, 2011	As of September 30, 2012
Finalized		6,990	10,266
In Progress		2,831	376
Categories of Finalized Risk Assessments	High	1,048 (15%)	1,769 (17%)
	Moderate	1,398 (20%)	1,624 (16%)
	Low	4,544 (65%)	6,873 (67%)

To help ensure that small drinking water systems are providing safe drinking water, those that are considered to be high risk are monitored through more frequent sampling and testing, and are re-inspected every two years. While moderate and low risk systems are also monitored through routine sampling and re-inspections, their drinking water is sampled and tested at a lower frequency and the systems are re-inspected every four years.

### Adverse Water Quality Incidents: Small Drinking Water Systems

Small drinking water system operators are required to sample their supplies for the presence of indicator bacteria (*total coliform* and *E. coli*) at a frequency outlined in the directive, or as set out in the small drinking water systems regulations made under the Health Protection and Promotion Act. When an incident is reported, system owners and/or operators work closely with public health inspectors to resolve the issue to protect drinking water users.

During the period between April 1, 2011 and March 31, 2012, 1,335 small drinking water systems reported a total of 1,766 adverse water quality incidents.

**Table 17: Summary of Adverse Water Quality Incidents for Small Drinking Water Systems by Parameter Type**

Parameter Type	April 1, 2011 to March 31, 2012	
	# of AWQIs	% of AWQIs
Microbiological	1,503	85
Other <sup>1</sup>	230	13
Chemical/Inorganic	33	2
<b>Total</b>	<b>1,766</b>	

<sup>1</sup> Other may include items such as an observation of treatment malfunction.

When an adverse water quality sample is found, mandatory reporting and corrective actions are taken. The owner/operator of a drinking water system is required to notify the local Medical Officer of Health and to follow up with any instruction that may be issued by a Medical Officer of Health. The local public health unit will perform a risk analysis and take appropriate action to inform and protect the public.

Response to an adverse water quality incident may include, issuing a drinking water advisory to notify potential users of the system whether the water is safe to use and drink or if it requires boiling to render it safe for use. The public health unit may also provide instruction to owner/operators of a drinking water system on how to mitigate the risk and may also ensure that the necessary corrective action is being taken on the affected drinking water system.

For more information about the Ministry of Health and Long-Term Care's Small Drinking Water Systems Program, please visit [www.health.gov.on.ca/english/public/program/pubhealth/safewater/safewater\\_resources.html](http://www.health.gov.on.ca/english/public/program/pubhealth/safewater/safewater_resources.html).

# TRAINING DRINKING WATER SYSTEM PROFESSIONALS

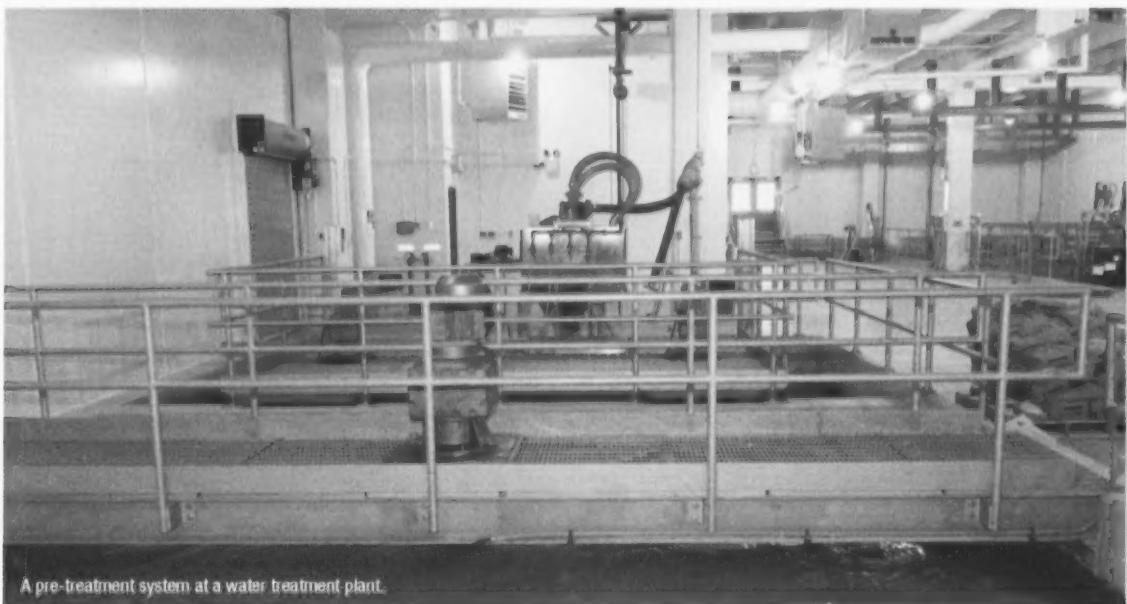
Ontario's drinking water operators are among the best trained in the world, thanks to stringent certification and training requirements. Operators are required to go through rigorous training, write examinations, and meet mandatory continuing education requirements to renew and maintain their certification.

Drinking water operators in Ontario must be certified and trained according to the type and class of facility they operate. If an operator works in more than one type of drinking water system, he or she may hold multiple certificates. As of March 31, 2012, 6,414 operators held a total of 8,914 certificates. The more complex a system is (the higher the class of system), the more training an operator must complete.

A new operator starts as an operator-in-training and writes an examination to become certified for each type of system. In 2011-12, 828 new operators, including those from First Nations communities, received 1,415 new operator-in-training certificates.

To continue as a drinking water operator, operator-in-training certificate holders must complete the ministry's entry-level drinking water operator training course. To help promote careers in the water and wastewater industry, the ministry has signed agreements with 16 community colleges that offer the mandatory entry-level drinking water operator training course as part of their environmental and engineering programs. By December 31, 2012, 750 students received the entry-level drinking water operator course certificate. Of these, approximately 34 per cent hold a valid drinking water operator certificate.

The Walkerton Clean Water Centre is one of the educational institutions in Ontario where operator training programs are offered. The Centre is a state-of-the-art facility that offers high quality hands-on training, classroom training and technology demonstration. They also deliver province wide training, with a focus on small and remote drinking water systems, including those serving First Nations. As of March 31, 2013, the Centre has trained more than 43,000 new and existing professionals since it opened.



# COMPLIANCE AND ENFORCEMENT REGULATION REQUIREMENTS

The Compliance and Enforcement Regulation (O. Reg. 242/05) requires the Ministry of the Environment to fulfill a number of specific responsibilities with respect to inspecting municipal residential drinking water systems and qualified and eligible laboratories that perform drinking water testing.

The summary table below shows the ministry's activities in relation to municipal residential drinking water systems and qualified and eligible laboratories that perform drinking water testing.

Table 18: Summary of Compliance and Enforcement Activities in 2011-12

Municipal Residential Drinking Water Systems
<ul style="list-style-type: none"><li>• Inspected all 676 municipal residential drinking water systems and provided inspection report to required persons within 45 days of completing inspection.</li><li>• Ensured that at least one out of every three inspections is unannounced.</li><li>• Responded as required to adverse water quality test reports or other reported problems.</li><li>• Took mandatory action within 14 days of finding a deficiency at a municipal residential drinking water system — one system with one deficiency was found. A Provincial Officer's Order was issued to the owner of the system.</li></ul>
Laboratories Qualified and Eligible to Perform Drinking Water Testing
<ul style="list-style-type: none"><li>• Inspected all 51 licensed laboratories and two out-of-province laboratories and provided them with inspection reports within 45 days of completing inspection.</li><li>• Ensured laboratories are inspected two times with one being unannounced.</li><li>• Took mandatory action within 14 days of finding an infraction at a qualified laboratory (or immediately in the case of a present drinking water health hazard) — one deficiency at each of two laboratories was found and referred to the ministry's Investigations and Enforcement Branch.</li></ul>

In addition to providing a framework for inspection and compliance activities, the Compliance and Enforcement Regulation also provides the public with the right to request an investigation of an alleged contravention of the Safe Drinking Water Act or any of its regulations or instruments.

Table 19: Summary of Requests for Drinking Water Investigation in 2011-12

Request for Drinking Water Investigation
<ul style="list-style-type: none"><li>• Received the first investigation request from a member of the public for an alleged contravention of the Safe Drinking Water Act at a school near Owen Sound.</li><li>• Conducted an investigation and determined that there was no evidence to support the allegations — the file was subsequently closed.</li></ul>

# CONVICTIONS

We continue to work with our drinking water partners on many fronts to overcome areas of non-compliance. Our inspectors may refer violations of Ontario's environmental laws, such as the Safe Drinking Water Act, to the ministry's Investigations and Enforcement Branch. When warranted, investigations are conducted. If the Investigations and Enforcement Branch lays charges, the evidence is sent to a Crown Attorney in the form of a Crown brief for the purposes of determining whether to proceed with a prosecution.

Between April 1, 2011 and March 31, 2012, there were 12 convictions of municipal residential and non-municipal year-round residential drinking water systems as well as systems serving designated facilities which resulted in fines totalling \$94,000.

Of the five convictions of municipal residential drinking water systems, two resulted from failing to comply with a condition of a Certificate of Approval for a Municipal Water System and failure to immediately report adverse drinking water test results to the ministry's Spills Action Centre. One individual and two operating authorities were convicted and fined for drinking water violations at three municipal residential drinking water systems. The municipal residential drinking water system owners were not charged or convicted in these cases.

See Appendices for more details.

**Table 20: Summary of Convictions for Drinking Water Prosecutions by Facility Type in 2011-12**

Facility Type	Number of Systems or Laboratories Prosecuted	Total Number of Cases with Convictions	Fines
Municipal Residential Drinking Water Systems <sup>1</sup>	5	5	\$44,000
Non-Municipal Year-Round Residential Drinking Water Systems	4	4	\$25,000
Systems Serving Designated Facilities	4	3	\$25,000
Schools and Day Nurseries	0	0	0
Licensed Laboratories	0	0	0
<b>Total</b>	<b>13</b>	<b>12</b>	<b>\$94,000</b>

<sup>1</sup> Includes three cases with convictions against one individual and two operating authorities with fines totalling \$35,000.

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# GLOSSARY

**Boil Water Advisory:** notice issued by local Medical Officer of Health to advise the community to boil or disinfect water before consumption. It is designed to make water safe to drink when there is a health risk through contamination that can be corrected by boiling or disinfecting the water.

**Chain of Custody Form:** a mandated document requiring completion by both drinking water system owners and licensed laboratories, under the Safe Drinking Water Act. This form accompanies the drinking water sample providing an accurate written record used to trace the possession, transfer and custody of a sample from the time of its collection to submission at the laboratory through testing and result reporting to sample disposal.

**Conservation Authorities:** local watershed management agencies that deliver services and programs that protect and manage water and other natural resources in partnership with government, landowners and other organizations ([www.conservation-ontario.on.ca](http://www.conservation-ontario.on.ca)).

**Contravention Order:** an order that may be issued by a Provincial Officer under section 105 of the Safe Drinking Water Act if the Provincial Officer reasonably believes a person is contravening or has contravened a provision of the act or its regulations, an order issued under the act, or a condition in a certificate, permit, licence or approval issued under the act. It may require the ordered party to comply with any directions set out in the order within the time specified.

**Director:** a person appointed by the Minister of the Environment under section 6 of the Safe Drinking Water Act.

**Drinking Water Advisory:** notice issued by local Medical Officer of Health when a drinking water problem cannot be corrected simply by boiling the water or through disinfection. Under a Drinking Water Advisory, consumers are advised to use another source of drinking water until further notice.

**Drinking Water Systems Serving Designated Facilities:** drinking water systems that only serve designated facilities such as schools (elementary and public), universities, colleges, children and youth care facilities (including day nurseries), health care facilities, children's camps and delivery agent care facilities (including certain hostels).

***Escherichia coli (E. coli)*:** a species of bacteria naturally present in the intestines of humans and animals.

**Local Services Boards:** provide services (including, in some cases, water services) to communities in areas of Northern Ontario without municipal structure. They are established pursuant to the Northern Services Boards Act. Drinking water systems run by Local Services Boards are generally categorized as non-municipal year-round residential drinking water systems under O. Reg. 170/03.

**Microbiological Organism:** an organism so small that it cannot be seen without a microscope, including bacteria, protozoa, fungi, viruses and algae.

**Municipal Residential Drinking Water Systems:** drinking water systems or part of a drinking water system that are owned by and/or supply water to a municipality, that serve six or more private residences, and that meet other relevant criteria under the Safe Drinking Water Act and its regulations.

**Non-Municipal Year-Round Residential Drinking Water Systems:** drinking water systems that are not municipal systems (and are not seasonal residential systems) that serve six or more private residences or a trailer park or campground with more than five service connections.

**Operating Authority:** with reference to a drinking water system, the person or entity that is given responsibility by the owner for the operation, management, maintenance or alteration of the system.

**Preventative Measures Order:** an order that may be issued by a Provincial Officer under section 106 of the Safe Drinking Water Act to a person who owns, manages or has control of a municipal drinking water system or a regulated non-municipal drinking water system, if the Provincial Officer considers it necessary for the purposes of the act. Such an order may be issued in the absence of a contravention, and is used to prevent possible future adverse effects.

**Provincial Officer's Order:** an order issued by a Provincial Officer.

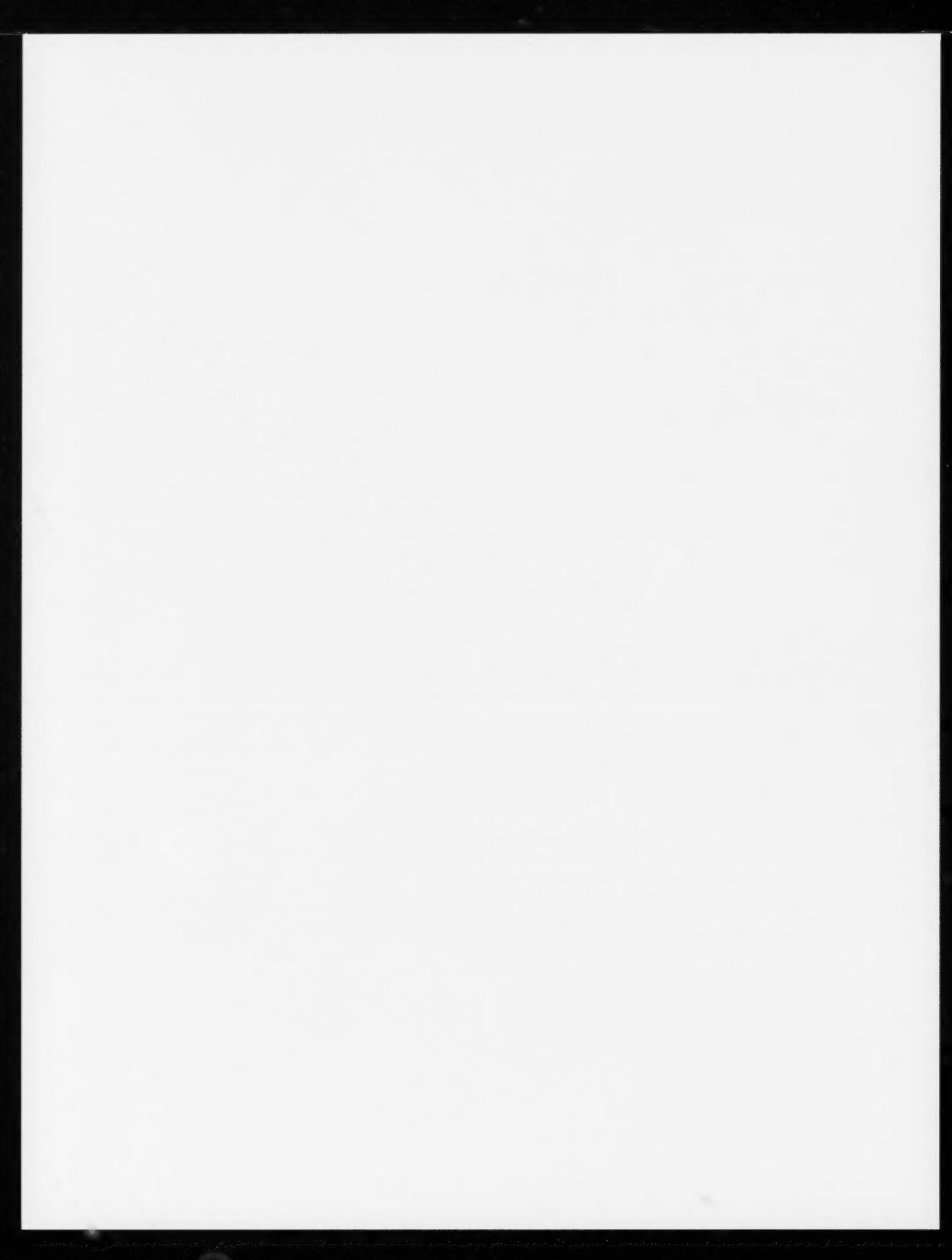
**Radiological Parameter:** refers to radionuclides which are an unstable form of a chemical element that decays and results in the emission of nuclear radiation.

**Small Drinking Water Systems:** are regulated under the Health Protection and Promotion Act and its small drinking water system regulations. These are generally stand-alone drinking water systems that supply water for consumption at public facilities such as restaurants, seasonal trailer parks and summer camps.

**Source Water Protection:** action taken to prevent the pollution of drinking water sources, including groundwater, lakes, rivers and streams. Source water protection under Ontario's Clean Water Act includes developing and implementing local plans to manage land uses and potential contaminants.

**Total Coliform:** a group of waterborne bacteria consisting of three main groups with common characteristics that is used as an indicator of water quality. The presence of total coliform bacteria in water leaving a treatment plant or in any treated water immediately after treatment could indicate inadequate treatment and possible water contamination.

**Water Quality:** a term used to describe the chemical, physical and biological characteristics of water, usually in respect to its suitability for a particular purpose, such as drinking.



**For More Information:**

[www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater)

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